

OCEANOGRAPHIC DATA AT THE S. M. B. L., 1971

Measurements of the surface sea water temperature were made every day at 9:00 in the morning at the fixed site on the south coast of the laboratory ground near the water intake of the laboratory by

Mr. Yoshirô Kashiya,
Mr. Sôichi Moriyama,
Mr. Mitsuru Ohta,
Mr. Shôzô Sakai,
Mr. Hidetomo Tanase, and
Mr. Yoshikazu Yamamoto.

The salinity was measured by salinometer (Tsurumi CO., LTD. Type E2).

Meteorological observations were made similarly in the laboratory yard by
Miss Junko Kondô.

The necessary correction after formal manuals of oceanographical and meteorological observations, as well as the typewriting of tables, were made by
Dr. Shin-ichirô Fuse.

Weather is shown in Beaufort notation, and wind force in Beaufort scale. The codes used are :

b	Blue sky	0	Calm	less than 0.3 m/sec
bc	Partly clouded	1	Light air	0.3~ 1.5 m/sec
c	Cloudy	2	Light breeze	1.6~ 3.3 m/sec
o	Overcast	3	Gentle breeze	3.4~ 5.4 m/sec
d	Drizzling rain	4	Moderate breeze	5.5~ 7.9 m/sec
r	Rain	5	Fresh breeze	8.0~10.7 m/sec
s	Snow			
p	Passing showers			
q	Squalls			

Summarizing the data, the following annual values are obtained for 1971 :

	Lowest	Highest	Mean
Air temperature (°C)	4.0 (Feb. 4)	31.2 (July 15)	17.7
Water temperature (°C)	9.10 (Mar. 11)	29.08 (Aug. 3)	19.92
Salinity (‰)	29.651 (May 19)	35.163 (Jan. 18)	33.944
Total precipitation (mm)	1816.0		

JANUARY							FEBRUARY						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰	date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	c	8.8	—	NW 1	16.50	34.668	1	c	4.7	—	NW 2	11.27	34.590
2	b	8.6	—	NW 1	16.60	34.686	2	o	4.8	—	NW 1	13.90	34.875
3	o	8.2	—	— 0	16.40	34.632	3	b	4.4	—	NW 1	14.10	34.832
4	c	7.4	3.4	— 0	16.86	34.108	4	bc	4.0	—	NW 2	12.70	34.878
5	r	5.2	1.9	NW 2	16.00	34.632	5	bc	5.9	—	NW 2	12.50	34.889
6	bc	5.4	1.2	N 1	15.50	34.650	6	b	6.5	—	NW 1	12.60	34.898
7	c	6.1	—	— 0	15.24	34.632	7	b	6.1	—	— 0	12.40	34.707
8	o	7.8	—	— 0	14.90	34.596	8	b	5.8	—	— 0	10.80	34.829
9	b	7.1	—	NW 1	14.16	34.596	9	bc	5.4	—	NW 2	10.80	34.570
10	b	4.8	—	— 0	13.80	34.325	10	bc	6.0	—	NW 2	11.10	34.562
11	o	5.4	—	NE 1	15.42	34.469	11	b	5.3	—	NW 1	12.70	34.964
12	b	8.5	—	— 0	15.76	34.747	12	o	7.2	—	— 0	12.90	34.602
13	d	10.1	0.5	NE 1	15.50	34.840	13	b	10.6	2.6	NW 2	13.60	34.573
14	bc	8.8	0.6	NW 1	13.92	34.879	14	b	8.6	—	— 0	14.58	34.611
15	b	6.6	—	NW 1	13.94	34.948	15	o	12.8	12.0	NW 1	14.90	34.443
16	c	9.6	—	NW 2	13.98	35.013	16	b	8.9	—	— 0	13.40	34.561
17	bc	7.4	—	NW 3	13.90	34.998	17	r	14.2	0.7	N 1	14.60	34.533
18	b	8.4	—	NW 3	12.50	35.163	18	b	9.3	17.5	N 2	13.68	34.732
19	c	10.9	—	NW 2	13.36	34.934	19	bc	9.4	—	N 2	13.70	34.539
20	o	8.4	—	— 0	14.20	35.029	20	b	7.4	—	— 0	12.50	34.594
21	r	14.6	12.5	— 0	16.30	34.388	21	o	10.3	—	E 1	13.52	34.433
22	b	10.4	3.0	NW 1	16.28	34.887	22	o	12.7	9.1	E 1	14.40	30.955
23	b	6.8	0.2	NNW 2	13.80	34.836	23	o	17.8	8.0	S 2	16.20	34.607
24	b	6.3	—	NW 1	13.40	34.695	24	bc	10.2	5.2	N 2	15.00	34.669
25	o	6.4	—	NE 1	13.85	34.922	25	c	5.8	—	— 0	13.80	34.879
26	b	6.4	3.2	NW 2	13.30	34.870	26	r	10.1	5.0	— 0	13.80	34.228
27	bc	6.4	—	N 1	13.52	34.806	27	b	11.6	6.5	N 1	14.80	34.724
28	c	5.4	—	N 2	11.80	34.851	28	bc	9.4	—	N 1	14.10	34.813
29	b	5.2	—	N 1	10.40	34.795							
30	bc	4.6	—	NW 3	10.80	34.637							
31	bc	6.4	—	NW 2	11.20	34.448							
mean		7.5			14.29	34.732	mean		8.4			13.37	34.540

MARCH							APRIL						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰	date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	o	8.6	—	S 1	13.72	34.796	1	o	14.8	30.1	NW 1	16.52	34.329
2	c	11.3	—	— 0	14.20	34.714	2	bc	15.8	—	— 0	16.33	34.188
3	o	14.0	29.0	N 2	17.10	34.444	3	b	16.8	—	WNW3	16.20	34.153
4	bc	7.4	—	N 3	12.40	34.650	4	o	15.2	—	WNW2	16.48	34.331
5	bc	6.8	—	N 2	12.36	34.642	5	c	17.4	—	NE 1	16.22	34.385
6	b	8.0	—	NW 1	12.20	34.516	6	r	15.4	0.6	S 1	16.59	34.394
7	bc	6.4	—	NW 2	10.50	34.603	7	bc	13.8	—	— 0	15.66	34.320
8	bc	6.2	—	NW 2	11.90	34.472	8	o	17.3	2.6	SW 1	16.84	34.007
9	b	9.0	—	N 2	10.00	34.248	9	r	18.7	13.5	SSW 3	17.80	34.074
10	b	7.3	—	NW 2	9.50	34.208	10	bc	13.4	42.2	NW 3	15.28	34.024
11	b	6.1	—	N 1	9.10	34.243	11	bc	15.2	—	NW 1	15.62	34.007
12	o	6.8	—	— 0	10.50	34.267	12	b	16.1	—	NE 1	15.34	34.305
13	c	8.9	0.5	N 2	11.70	34.423	13	o	15.4	—	NE 1	15.55	34.166
14	c	5.3	—	NW 2	10.90	34.519	14	o	16.6	—	— 0	15.91	34.029
15	b	7.0	—	NW 2	11.00	34.500	15	o	17.3	—	WNW2	16.22	33.979
16	c	11.9	—	NW 1	12.24	34.484	16	o	17.3	—	— 0	16.47	33.959
17	bc	10.4	0.8	NW 3	13.20	34.577	17	o	18.2	—	— 0	16.51	33.833
18	b	9.6	—	— 0	13.60	34.547	18	o	17.4	2.7	NW 3	14.73	33.884
19	bc	12.6	—	NW 2	14.40	34.662	19	b	15.2	—	— 0	15.49	33.922
20	b	13.6	—	— 0	15.10	34.652	20	bc	16.9	—	NW 1	17.42	34.390
21	b	15.1	—	— 0	14.92	34.692	21	bc	17.8	—	— 0	17.72	34.434
22	b	14.4	—	WNW 1	15.63	34.986	22	r	13.9	14.2	— 0	19.18	34.369
23	r	7.4	6.6	NNW 2	13.54	34.403	23	b	18.4	—	S 1	19.06	33.804
24	bc	7.8	1.7	NW 2	12.42	34.403	24	c	19.3	—	— 0	19.54	34.668
25	b	10.3	—	NW 1	13.70	34.403	25	c	19.4	—	— 0	19.02	34.495
26	o	15.1	—	SW 1	15.80	34.681	26	o	20.0	—	S 1	19.48	34.647
27	bc	15.8	13.1	NW 2	16.28	34.527	27	bc	17.8	—	NW 1	18.71	34.647
28	bc	15.4	—	SW 1	15.51	34.564	28	o	18.7	—	NE 2	18.41	34.609
29	bc	19.4	—	SE 2	16.94	34.609	29	o	17.3	24.4	NW 3	17.62	34.546
30	r	13.8	17.5	NW 1	16.14	34.318	30	o	16.4	17.4	NW 2	17.19	34.406
31	r	15.6	38.3	NW 2	16.36	34.001							
mean		10.6			13.32	34.512	mean		16.8			16.97	34.243

MAY							JUNE						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰	date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	b	17.2	—	NW 3	17.43	34.452	1	b	23.4	—	— 0	22.54	33.488
2	b	19.9	—	SSW 2	18.20	34.263	2	o	25.3	—	NW 1	22.39	33.542
3	bc	20.6	—	SW 1	19.76	34.416	3	r	18.6	11.2	NE 1	21.28	32.261
4	r	19.9	2.2	SSW 2	19.55	34.221	4	o	23.4	15.3	S 3	21.20	33.651
5	bc	15.6	—	NW 2	17.33	34.463	5	o	19.4	35.5	— 0	20.82	30.494
6	r	15.9	1.8	— 0	18.29	34.080	6	r	17.4	50.2	NW 2	20.21	31.233
7	bc	16.6	10.9	NW 3	18.09	33.742	7	o	20.8	1.5	— 0	20.87	32.879
8	b	18.7	—	NW 3	18.50	33.949	8	o	22.4	—	— 0	21.56	32.826
9	b	15.2	—	— 0	17.77	34.275	9	o	23.4	0.6	— 0	22.07	33.792
10	c	21.2	—	— 0	18.72	34.352	10	o	23.7	3.2	S 1	23.04	33.869
11	c	21.7	—	— 0	19.62	34.377	11	o	24.3	3.5	SW 2	23.83	33.385
12	bc	21.8	—	— 0	20.72	34.315	12	bc	25.4	—	SSW 3	23.42	33.877
13	bc	21.2	—	S 1	20.69	34.363	13	r	21.0	11.3	SW 1	22.91	33.781
14	bc	22.3	—	— 0	20.62	34.371	14	o	22.8	0.3	— 0	22.15	33.864
15	o	16.6	4.0	— 0	19.84	34.076	15	bc	20.4	16.5	N 1	22.58	33.025
16	b	19.7	4.0	— 0	19.50	34.367	16	o	22.4	54.0	— 0	22.23	32.758
17	c	22.3	—	— 0	20.59	34.293	17	bc	24.3	—	NW 1	22.70	32.371
18	o	21.2	—	— 0	20.77	34.247	18	o	24.2	—	NW 1	22.79	32.804
19	r	18.4	23.2	— 0	20.60	29.651	19	b	23.8	—	S 1	22.78	33.581
20	bc	20.8	25.3	— 0	21.54	33.280	20	r	22.4	—	E 1	22.83	32.809
21	b	21.6	—	SSW 1	21.17	34.236	21	o	22.9	2.3	NW 1	22.71	33.482
22	c	22.1	—	— 0	22.22	34.076	22	o	22.6	—	— 0	22.90	32.836
23	r	18.4	1.8	NE 1	21.91	34.202	23	o	22.6	—	— 0	23.06	33.691
24	o	20.4	6.1	— 0	21.41	34.315	24	r	22.9	1.0	— 0	23.38	33.789
25	o	22.1	8.4	NW 3	22.16	34.386	25	o	23.3	6.4	SW 1	23.63	33.788
26	bc	23.2	—	— 0	22.12	34.523	26	bc	25.8	—	S 1	24.45	33.869
27	r	17.8	4.6	— 0	22.08	34.303	27	r	24.7	0.5	— 0	24.22	33.661
28	r	18.8	61.2	NE 1	21.78	33.601	28	b	26.6	—	NW 1	25.22	33.153
29	o	19.6	0.2	— 0	21.89	33.468	29	b	28.8	—	NW 2	24.65	33.580
30	o	20.1	0.2	— 0	20.99	33.412	30	o	25.4	—	SW 1	25.02	33.783
31	o	21.2	—	— 0	21.72	32.779							
mean		19.7			20.24	33.963	mean		23.1			22.78	33.197

JULY							AUGUST						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰	date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	r	24.8	—	NE 1	24.14	33.613	1	b	30.7	—	NE 1	28.42	33.471
2	o	26.3	21.6	— 0	24.55	33.597	2	o	30.3	—	S 1	27.82	33.263
3	bc	28.4	—	— 0	24.80	33.431	3	bc	30.4	2.5	ESE 1	29.08	33.514
4	b	28.9	—	NW 1	26.00	33.328	4	bc	31.0	0.5	NE 2	28.60	33.399
5	c	28.8	—	W 1	26.10	33.439	5	c	29.7	5.5	S 3	28.30	33.621
6	c	28.2	—	S 1	26.64	33.237	6	r	27.3	21.0	S 3	27.46	31.958
7	r	26.8	28.8	ENE 2	25.60	32.469	7	c	27.2	3.5	S 1	27.60	33.522
8	b	27.8	10.6	S 1	25.62	33.064	8	b	29.4	—	— 0	28.30	33.490
9	bc	27.5	2.5	S 1	26.80	33.236	9	o	28.3	—	S 1	27.80	33.094
10	o	27.3	—	S 1	25.86	33.540	10	bc	29.4	—	S 2	27.60	33.266
11	o	27.5	—	— 0	26.40	33.019	11	b	28.4	0.8	S 1	27.80	33.708
12	o	27.8	—	S 1	26.10	—	12	c	28.6	0.6	S 1	28.10	33.600
13	b	27.8	—	W 1	26.10	33.466	13	b	29.6	—	N 1	27.90	33.703
14	bc	30.1	—	NW 1	26.42	33.729	14	bc	29.9	—	N 1	27.80	33.723
15	b	31.2	—	W 1	26.10	33.682	15	bc	28.9	—	— 0	27.74	33.861
16	b	29.4	—	NW 1	26.30	33.680	16	b	30.5	—	— 0	27.94	33.287
17	bc	29.2	—	S 1	26.42	33.662	17	c	26.8	0.5	N 1	26.80	33.500
18	b	29.5	—	S 1	—	—	18	b	27.8	—	— 0	26.28	33.404
19	c	28.4	—	NW 1	26.05	33.464	19	o	24.4	1.8	NE 2	26.02	33.465
20	o	26.4	—	W 2	25.00	33.888	20	o	24.6	2.7	NE 2	25.53	33.608
21	o	24.6	1.8	NW 1	23.50	33.942	21	c	25.8	—	— 0	26.10	33.699
22	o	28.1	—	NE 1	24.31	33.670	22	bc	27.8	—	— 0	26.96	33.892
23	r	24.8	39.5	NE 1	25.45	33.388	23	b	28.6	—	— 0	27.30	34.020
24	r	24.5	96.2	W 1	25.10	30.114	24	bc	28.6	—	— 0	27.50	34.090
25	o	26.4	73.4	S 2	24.75	32.928	25	c	27.8	—	— 0	27.60	34.145
26	r	27.4	0.9	S 1	24.60	33.065	26	o	25.8	4.0	— 0	26.63	34.001
27	c	27.8	—	— 0	25.42	33.106	27	c	26.8	0.7	— 0	26.70	34.057
28	o	28.0	—	S 1	26.72	32.961	28	bc	29.7	—	W 1	27.20	33.791
29	bc	28.8	—	S 1	27.79	33.269	29	r	29.9	—	N 1	27.56	33.795
30	b	28.4	—	— 0	28.22	33.282	30	r	24.3	32.0	W 3	25.50	32.500
31	b	29.3	—	S 1	28.31	33.195	31	r	23.3	111.6	N 4	25.70	31.807
mean		27.7			25.84	33.223	mean		28.1			27.34	33.492

SEPTEMBER							OCTOBER						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰	date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	c	25.3	0.2	NW 3	25.50	32.483	1	r	17.4	3.0	WSW2	23.82	32.734
2	b	24.6	—	— 0	25.77	31.855	2	o	20.4	22.2	NE 2	24.37	33.255
3	b	26.1	—	— 0	26.28	32.685	3	c	20.5	0.2	— 0	24.53	33.414
4	o	25.8	—	— 0	26.30	32.989	4	r	19.9	—	ENE 1	23.50	33.362
5	c	27.6	6.8	WSW 3	26.40	33.315	5	r	17.7	26.2	NNE 2	23.43	33.077
6	o	26.6	0.2	SSW 2	26.10	33.579	6	p	18.4	0.4	— 0	23.01	34.285
7	r	24.8	0.9	— 0	25.93	33.213	7	bc	20.2	2.3	NW 1	23.88	34.097
8	bc	25.4	2.4	— 0	26.14	33.231	8	b	20.4	—	— 0	23.60	34.283
9	bc	25.8	—	— 0	25.94	33.120	9	o	21.8	—	NE 1	24.35	34.113
10	r	22.8	5.4	ENE 3	25.54	33.238	10	r	21.6	6.3	— 0	24.26	34.281
11	d	25.5	12.2	— 0	25.80	33.457	11	o	21.3	14.9	— 0	23.74	33.939
12	bc	26.5	0.2	NW 1	25.42	33.517	12	o	16.6	12.1	NW 3	23.84	34.659
13	b	25.2	—	N 2	25.30	33.025	13	o	18.6	—	NW 2	22.04	34.470
14	bc	24.2	—	— 0	25.30	33.539	14	r	17.8	18.3	NW 2	22.82	33.555
15	o	22.4	—	— 0	25.11	33.400	15	b	20.2	8.3	— 0	22.73	34.031
16	o	24.2	—	— 0	25.15	32.938	16	b	18.9	—	— 0	21.76	32.870
17	o	24.2	3.6	NE 2	25.19	33.210	17	b	19.6	—	— 0	22.90	33.670
18	r	21.7	20.3	NE 3	24.57	32.586	18	o	17.4	—	NW 1	22.24	33.195
19	o	26.3	23.1	— 0	25.55	33.518	19	o	19.1	—	— 0	22.12	33.204
20	bc	26.6	—	NW 1	25.43	33.601	20	b	18.9	—	— 0	21.66	33.475
21	o	25.4	2.7	— 0	26.32	33.802	21	b	19.4	—	NW 1	22.07	33.376
22	r	25.3	14.5	— 0	26.17	33.599	22	bc	20.0	—	NW 1	21.76	33.458
23	bc	25.8	0.9	— 0	26.00	33.628	23	o	22.1	4.4	— 0	22.80	33.606
24	b	27.2	—	S 2	26.40	33.695	24	bc	20.4	—	NW 1	22.42	33.411
25	bc	26.6	—	— 0	26.70	33.782	25	b	18.4	—	— 0	21.36	33.787
26	r	22.7	18.0	N 1	26.50	31.926	26	r	15.7	37.0	NNE 2	21.40	33.449
27	c	24.7	147.0	— 0	25.50	32.808	27	bc	16.4	—	NW 2	20.85	33.146
28	bc	23.4	—	NW 2	24.67	32.935	28	bc	16.1	—	NW 2	19.22	32.933
29	o	20.2	—	NW 2	23.91	32.864	29	bc	16.1	—	— 0	19.81	32.887
30	b	22.6	—	NW 1	24.27	33.343	30	o	16.6	8.4	NE 2	21.11	32.438
							31	bc	18.0	7.9	NE 3	19.74	33.013
mean		24.9			25.64	33.163	mean		18.9			22.49	33.531

NOVEMBER						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	b	17.6	—	— 0	19.75	33.162
2	b	20.5	—	— 0	20.50	33.454
3	o	18.3	—	NE 2	21.18	34.071
4	o	16.9	4.8	NE 1	21.98	34.102
5	b	17.1	—	NW 2	21.56	34.325
6	c	17.6	—	SE 1	21.57	34.186
7	o	16.8	—	NW 2	21.80	34.215
8	b	14.6	—	NW 3	18.52	33.981
9	b	13.3	—	NW 1	19.48	34.205
10	r	12.2	6.9	NE 1	19.46	33.680
11	b	14.4	10.0	— 0	19.80	33.812
12	b	15.9	—	— 0	19.42	33.803
13	bc	17.8	—	— 0	20.99	34.195
14	o	17.6	0.3	— 0	21.48	34.402
15	r	16.7	8.0	NW 1	21.15	33.784
16	o	13.9	4.3	NW 2	20.44	34.131
17	o	14.3	—	— 0	19.64	34.259
18	o	13.2	2.0	N 1	19.51	34.343
19	b	14.8	—	NW 2	19.22	34.161
20	b	13.8	—	NE 1	19.85	34.062
21	b	12.9	—	E 1	19.72	34.103
22	b	15.7	—	NNW 4	18.63	34.147
23	c	12.8	—	— 0	19.12	33.894
24	b	14.3	—	NW 3	19.10	33.814
25	c	15.5	—	NW 3	17.71	34.248
26	b	14.7	—	NW 2	17.85	33.852
27	c	14.9	—	NE 1	18.33	33.646
28	b	15.7	—	NW 1	18.93	33.671
29	c	13.8	—	NW 3	18.53	34.126
30	c	8.8	—	WNW 4	15.49	34.250
mean		15.2			19.69	34.003

DECEMBER						
date	weather	air temperature °C	precipitation mm	wind	water temperature °C	salinity ‰
1	o	11.3	—	WNW 3	15.75	34.653
2	b	10.4	—	N 1	17.80	34.691
3	bc	15.9	3.5	WNW 2	18.81	34.930
4	bc	10.8	—	NW 2	17.80	34.682
5	c	11.3	—	NE 1	18.14	34.745
6	bc	13.2	0.4	— 0	17.90	34.789
7	bc	7.4	0.5	N 2	15.50	34.656
8	bc	9.4	—	N 2	17.00	34.533
9	bc	8.8	—	N 2	16.60	34.668
10	b	9.1	—	NW 1	16.51	34.990
11	b	10.7	—	— 0	17.10	34.965
12	c	12.0	54.0	W 2	16.82	34.688
13	b	8.4	—	NW 1	16.10	34.998
14	bc	9.8	—	— 0	16.80	34.929
15	bc	9.6	1.7	N 2	16.00	34.923
16	bc	8.4	—	N 1	15.50	34.950
17	b	11.2	—	N 1	16.20	35.035
18	o	11.8	3.9	— 0	17.30	34.961
19	d	15.1	1.6	— 0	19.50	34.946
20	b	11.8	2.6	N 1	17.30	34.946
21	b	11.6	—	N 1	17.20	34.942
22	c	8.8	—	N 1	15.30	35.044
23	o	8.6	—	N 1	15.30	34.963
24	bc	7.9	—	— 0	16.30	34.962
25	d	11.9	—	— 0	16.30	34.858
26	r	12.5	39.0	N 1	17.40	32.803
27	r	12.4	6.2	— 0	17.80	34.244
28	bc	9.6	30.6	N 1	16.50	34.553
29	b	4.2	—	— 0	14.12	34.063
30	r	12.0	1.5	— 0	16.88	34.518
31	o	12.4	25.4	NW 1	17.42	34.653
mean		10.6			16.80	34.719